ABSTRACT

Power quality is defined as any power problem manifested in voltage, current or frequency deviation that results in failure or misoperation of customer equipment. Harmonic is sinusoidal voltage or currents which has frequencies that are integer multiples of the fundamental frequency (frequency at which the supply system is designed to operate, normally 50 or 60 Hz).Firstly the harmonic current and voltage were get at substation board in FKEE lab by using power quality analyzer. After a week, the data transferred to the computer by using FLUKEVIEW software. Then, the data were compared to International Standard which is AS61000.3.6 and IEEE 519 by using Visual Basic (Microsoft Web Developer) to display it. The results show us that all the data were satisfy with the standards. During the study period (between 12 pm until 6 pm) at the lab, there were the peak period of harmonic but from 7 pm to 7 am, the harmonics were lower than before. Its shows us that the usage of the electrical equipment such as computers, lighting, motors were higher during our lab period. So, from the analysis we know when is the peak time of harmonic will occur and the sources of the harmonic. Besides that, we also know about the effect of the harmonic distortion on electrical equipment.

ABSTRAK

Kualiti tenaga adalah ditakrifkan sebagai sebarang masalah kuasa yang dinyatakan dalam voltan, arus atau sisihan frekuensi yang menyebabkan kegagalan operasi peralatan pelanggan. Sinusoidal harmonik bagi voltan atau arus yang mempunyai frekuensi berganda dari frekuensi asas (frekuensi pada sistem bekalan untuk beroperasi, biasanya 50 atau 60 Hz). Kaedah pertama ialah harmonik pada arus dan voltan perlu diambil daripada pencawang di makmal FKEE dengan menggunakan sejenis alat untuk merekod data iaitu power quality analzer. Selepas seminggu, data dipindahkan ke komputer dengan menggunakan perisian FLUKEVIEW. Kemudian, data yang diambil perlu dibandingkan dengan Piawaian Antarabangsa iaitu AS61000.3.6 dan IEEE 519 dengan menggunakan perisian Visual Basic (Microsoft Web Developer), 2005. Keputusan perbandingan menunjukkan bahawa ianya tidak melebihi dari piawaian yang ditetapkan . Semasa jangka masa kajian (antara jam 12 tengah hari sehingga 6 petang) di kawasan makmal, nilai harmonik akan mencapai kemuncak tetapi dari jam 7 petang sehimmga 7 pagi, nilai harmonik akan mengalami penrurnan. Ini menunjukkan bahawa penggunaan peralatan elektrik seperti komputer, lampu, motor adalah lebih tinggi semasa tempoh makmal FKEE beroperasi. Jadi, daripada analisis ini kita dapat menentukan tempoh masa nilai harmonik mencapai kemuncak dan sumber-sumber yang menyebabkan terhasilnya harmonik. Selain itu kita juga dapat mengetaui kesan-kesan yang dihasilkan oleh harmonic pada peralatan-peralatn elektrik pelanggan.